

WHAT IS CLAIMED IS:

1. An inkjet recording head which scans in a direction intersecting a conveyance direction of a recording medium and records an image on the recording medium with ink drops ejected from nozzles, the inkjet recording head comprising:

a nozzle plate in which the nozzles which eject the ink drops are formed;

pressure chambers communicating with the nozzles;

actuators abutting at the pressure chambers, which at least one of increase and reduce pressures of ink in the pressure chambers; and

a plurality of nozzle rows parallel to the conveyance direction of the recording medium,

wherein the inkjet recording head includes at least two nozzle groups which are grouped over a plurality of the nozzle rows, and

each nozzle group is offset, relative to a neighboring nozzle group, in a direction intersecting a row direction of the nozzle rows such that the nozzle groups are arranged in a staggered form, and the numbers of nozzles in the nozzle rows of each nozzle group decrease in the direction intersecting the row direction, from the nozzle row at a side furthest from the neighboring nozzle group to the nozzle row at a side closest to the neighboring nozzle group.

2. An inkjet recording head which records an image with ink drops ejected from nozzles over a width of a recording medium which is being conveyed, the inkjet recording head comprising:

a nozzle plate in which the nozzles which eject the ink drops are formed;

pressure chambers communicating with the nozzles;
actuators abutting at the pressure chambers, which at least one of increase and reduce pressures of ink in the pressure chambers; and
a plurality of nozzle rows in a direction intersecting the conveyance direction of the recording medium,
wherein the inkjet recording head includes at least two nozzle groups which are grouped over a plurality of the nozzle rows, and
each nozzle group is offset, relative to a neighboring nozzle group, in a direction intersecting a row direction of the nozzle rows such that the nozzle groups are arranged in a staggered form, and the numbers of nozzles in the nozzle rows of each nozzle group decrease in the direction intersecting the row direction, from the nozzle row at a side furthest from the neighboring nozzle group to the nozzle row at a side closest to the neighboring nozzle group.

3. The inkjet recording head of claim 1, wherein, when viewed in the row direction of the nozzle rows, the nozzles of the nozzle groups are disposed to line up in the row direction.

4. The inkjet recording head of claim 1, wherein arrangement forms of the nozzles of the nozzle groups comprise, when straight lines are taken between the nozzles disposed at outer edges of the nozzle groups, at least one of a triangular form and a trapezoid form.

5. The inkjet recording head of claim 4, wherein the arrangement forms of the nozzles of the nozzle groups include a combination of a plurality of forms

including a triangular form and a trapezoid form.

6. The inkjet recording head of claim 1, wherein the inkjet recording head has an actuator unit for each nozzle group, the actuator unit being structured to include at least the pressure chambers and the actuators respectively corresponding to the nozzles constituting the nozzle groups.

7. The inkjet recording head of claim 6, wherein each nozzle group is provided with an ink discharge unit including at least the nozzle plate and the actuator unit.

8. The inkjet recording head of claim 1, wherein the actuators comprise piezoelectric elements for converting electrical energy to mechanical energy.

9. The inkjet recording head of claim 1, wherein the actuators comprise heat-generating resistors which pressurize the ink in the pressure chambers by heating and causing bubbling.

10. The inkjet recording head of claim 1, wherein the nozzle groups are disposed such that, when viewed in the row direction of the nozzle rows, the nozzles of all the nozzle groups that structure one side of the staggered-form arrangement are lined up in the row direction.

11. The inkjet recording head of claim 10, wherein the nozzle groups are disposed such that, when viewed in the row direction of the nozzle rows, the

nozzles of all the nozzle groups that structure the other side of the staggered-form arrangement are lined up in the row direction.

12. An inkjet recording head which scans in a direction intersecting a conveyance direction of a recording medium and records an image on the recording medium with ink drops ejected from nozzles, the inkjet recording head comprising:

- a nozzle plate in which the nozzles which eject the ink drops are formed;
- pressure chambers communicating with the nozzles;

- actuators abutting at the pressure chambers, which at least one of increase and reduce pressures of ink in the pressure chambers; and

- a plurality of nozzle rows parallel to the conveyance direction of the recording medium,

- wherein the inkjet recording head includes at least two nozzle groups which are grouped over a plurality of the nozzle rows,

- numbers of nozzles in the nozzle rows in a first of the nozzle groups decrease in one direction intersecting a row direction of the nozzle rows,

- numbers of nozzles in the nozzle rows in a second of the nozzle groups, which neighbors the first nozzle group in the row direction, decrease in a direction opposite to the one direction, and

- the first nozzle group and the second nozzle group are spaced apart in the row direction.

13. The inkjet recording head of claim 12, wherein

- numbers of nozzles in the nozzle rows in a third of the nozzle groups,

which neighbors the second nozzle group in the row direction, decrease in the one direction,

numbers of nozzles in the nozzle rows in a fourth of the nozzle groups, which neighbors the third nozzle group in the row direction, decrease in direction opposite to the one direction,

the second, third and fourth nozzle groups are spaced apart in the row direction, and

the second and fourth nozzle groups are arranged in a staggered form with respect to the first and third nozzle groups.

14. The inkjet recording head of claim 13, wherein, when viewed in the row direction of the nozzle rows, the nozzles of the first nozzle group are disposed so as to line up with the nozzles of the third nozzle group.

15. The inkjet recording head of claim 13, wherein, when viewed in the row direction of the nozzle rows, the nozzles of the second nozzle group are disposed so as to line up with the nozzles of the fourth nozzle group.

16. The inkjet recording head of claim 13, wherein, when viewed in the row direction of the nozzle rows, the nozzles of the nozzle groups are disposed to line up in the row direction.

17. An inkjet recording head which records an image with ink drops ejected from nozzles over a width of a recording medium which is being conveyed, the inkjet recording head comprising:

a nozzle plate in which the nozzles which eject the ink drops are formed;
pressure chambers communicating with the nozzles;
actuators abutting at the pressure chambers, which at least one of increase and reduce pressures of ink in the pressure chambers; and
a plurality of nozzle rows in a direction intersecting the conveyance direction of the recording medium,
wherein the inkjet recording head includes at least two nozzle groups which are grouped over a plurality of the nozzle rows,
numbers of nozzles in the nozzle rows in a first of the nozzle groups decrease in one direction intersecting a row direction of the nozzle rows,
numbers of nozzles in the nozzle rows in a second of the nozzle groups, which neighbors the first nozzle group in the row direction, decrease in a direction opposite to the one direction, and
the first nozzle group and the second nozzle group are spaced apart in the row direction.

18. The inkjet recording head of claim 17, wherein

numbers of nozzles in the nozzle rows in a third of the nozzle groups, which neighbors the second nozzle group in the row direction, decrease in the one direction,
numbers of nozzles in the nozzle rows in a fourth of the nozzle groups, which neighbors the third nozzle group in the row direction, decrease in the direction opposite to the one direction,
the second, third and fourth nozzle groups are spaced apart in the row direction, and

the second and fourth nozzle groups are arranged in a staggered form with respect to the first and third nozzle groups.

19. The inkjet recording head of claim 18, wherein, when viewed in the row direction of the nozzle rows, the nozzles of the first nozzle group are disposed so as to line up with the nozzles of the third nozzle group.

20. The inkjet recording head of claim 18, wherein, when viewed in the row direction of the nozzle rows, the nozzles of the second nozzle group are disposed so as to line up with the nozzles of the fourth nozzle group.

21. The inkjet recording head of claim 18, wherein, when viewed in the row direction of the nozzle rows, the nozzles of the nozzle groups are disposed to line up in the row direction.

22. An inkjet recording device employing the inkjet recording head of claim 1.

23. An inkjet recording device employing the inkjet recording head of claim 2.